



**NSAI**  
Standards

Irish Standard  
I.S. EN IEC 61000-6-1:2019

# Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments

**I.S. EN IEC 61000-6-1:2019**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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## National Foreword

I.S. EN IEC 61000-6-1:2019 is the adopted Irish version of the European Document EN IEC 61000-6-1:2019, Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments

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EUROPEAN STANDARD

**EN IEC 61000-6-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2019

ICS 33.100.20

Supersedes EN 61000-6-1:2007

English Version

**Electromagnetic compatibility (EMC) - Part 6-1: Generic  
standards - Immunity standard for residential, commercial and  
light-industrial environments  
(IEC 61000-6-1:2016)**

Compatibilité électromagnétique (CEM) - Partie 6-1:  
Normes génériques - Norme d'immunité pour les  
environnements résidentiels, commerciaux et de l'industrie  
légère  
(IEC 61000-6-1:2016)

Elektromagnetische Verträglichkeit - Teil 6-1:  
Fachgrundnormen - Störfestigkeit für Wohnbereich,  
Geschäfts- und Gewerbebereiche sowie Kleinbetriebe  
(IEC 61000-6-1:2016)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

**EN IEC 61000-6-1:2019 (E)****European foreword**

The text of document 77/520/FDIS, future edition 3 of IEC 61000-6-1, prepared by IEC/TC 77 "Electromagnetic compatibility" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61000-6-1:2019.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2019-08-22
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-02-22

This document supersedes EN 61000-6-1:2007.

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

**Endorsement notice**

The text of the International Standard IEC 61000-6-1:2016 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61000-4-12	NOTE	Harmonized as EN 61000-4-12
IEC 61000-4-13	NOTE	Harmonized as EN 61000-4-13
IEC 61000-4-16	NOTE	Harmonized as EN 61000-4-16
IEC 61000-4-18	NOTE	Harmonized as EN 61000-4-18
IEC 61000-4-19	NOTE	Harmonized as EN 61000-4-19
IEC 61000-4-29	NOTE	Harmonized as EN 61000-4-29
IEC 61000-4-31	NOTE	Harmonized as EN 61000-4-31

## Annex ZA

(normative)

### Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-161	-	International Electrotechnical Vocabulary. Chapter 161: Electromagnetic compatibility	-	-
IEC 61000-4-2	2008	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	2009
IEC 61000-4-3	2006	Electromagnetic compatibility (EMC) - Part 4-3 : Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	2006
+ A1	2007		+ A1	2008
+ A2	2010		+ A2	2010
IEC 61000-4-4	2012	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	2012
IEC 61000-4-5	2014	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	2014
IEC 61000-4-6	2013	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	2014
IEC 61000-4-8	2009	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	EN 61000-4-8	2010
IEC 61000-4-11	2004	Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	2004

**EN IEC 61000-6-1:2019 (E)**

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-20	2010	Electromagnetic compatibility (EMC) - Part 4-20: Testing and measurement techniques - Emission and immunity testing in transverse electromagnetic (TEM) waveguides	EN 61000-4-20	2010
IEC 61000-4-21	2011	Electromagnetic compatibility (EMC) - Part 4-21: Testing and measurement techniques - Reverberation chamber test methods	EN 61000-4-21	2011
IEC 61000-4-22	2010	Electromagnetic compatibility (EMC) - Part 4-22: Testing and measurement techniques - Radiated emissions and immunity measurements in fully anechoic rooms (FARs)	EN 61000-4-22	2011
IEC 61000-4-34	2005	Electromagnetic compatibility (EMC) - Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current more than 16 A per phase	EN 61000-4-34	2007
+ A1	2009		+ A1	2009





**IEC 61000-6-1**

Edition 3.0 2016-08

# **INTERNATIONAL STANDARD**

## **NORME INTERNATIONALE**

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**Electromagnetic compatibility (EMC) –  
Part 6-1: Generic standards – Immunity standard for residential, commercial and  
light-industrial environments**

**Compatibilité électromagnétique (CEM) –  
Partie 6-1: Normes génériques – Norme d'immunité pour les environnements  
résidentiels, commerciaux et de l'industrie légère**



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**IEC 61000-6-1**

Edition 3.0 2016-08

# **INTERNATIONAL STANDARD**

## **NORME INTERNATIONALE**

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**Electromagnetic compatibility (EMC) –  
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résidentiels, commerciaux et de l'industrie légère**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### **ELECTROMAGNETIC COMPATIBILITY (EMC) –**

#### **Part 6-1: Generic standards – Immunity standard for residential, commercial and light-industrial environments**

### FOREWORD

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International Standard IEC 61000-6-1 has been prepared by IEC technical committee 77: Electromagnetic compatibility.

This third edition cancels and replaces the second edition published in 2005. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) improvement of the environmental description;
- b) extension of the frequency range for the radio-frequency electromagnetic field test according to IEC 61000-4-3;

- c) amended test levels at particular frequencies for the radio-frequency electromagnetic field test according to IEC 61000-4-3;
- d) change of the repetition frequency for the fast transients immunity test according to IEC 61000-4-4;
- e) introduction of requirements according to IEC 61000-4-34;
- f) revision of the test levels;
- g) consideration of measurement uncertainty;
- h) addition of Annex A.

The text of this standard is based on the following documents:

FDIS	Report on voting
77/520/FDIS	77/522/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61000 series, published under the general title *Electromagnetic compatibility (EMC)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## INTRODUCTION

IEC 61000 is published in separate parts according to the following structure:

### **Part 1: General**

General considerations (introduction, fundamental principles)  
Definitions, terminology

### **Part 2: Environment**

Description of the environment  
Classification of the environment  
Compatibility levels

### **Part 3: Limits**

Emission limits  
Immunity limits (insofar as they do not fall under the responsibility of the product committees)

### **Part 4: Testing and measurement techniques**

Measurement techniques  
Testing techniques

### **Part 5: Installation and mitigation guidelines**

Installation guidelines  
Mitigation methods and devices

### **Part 6: Generic standards**

### **Part 9: Miscellaneous**

Each part is further subdivided into several parts, published either as International Standards or as Technical Specifications or Technical Reports, some of which have already been published as sections. Others will be published with the part number followed by a dash and a second number identifying the subdivision (example: IEC 61000-6-1).

## **ELECTROMAGNETIC COMPATIBILITY (EMC) –**

### **Part 6-1: Generic standards – Immunity standard for residential, commercial and light-industrial environments**

#### **1 Scope**

This part of IEC 61000 for EMC immunity requirements applies to electrical and electronic equipment intended for use in residential, commercial, public and light-industrial locations. Immunity requirements in the frequency range 0 Hz to 400 GHz are covered. No tests need to be performed at frequencies where no requirements are specified.

This generic EMC immunity standard is applicable if no relevant dedicated product or product-family EMC immunity standard exists.

This standard applies to electrical and electronic equipment intended to be operated in

- residential locations, as defined in 3.8, both indoor and outdoor,
- commercial, public and light industrial locations, as defined in 3.9, both indoor and outdoor.

This standard applies also to equipment which is battery operated or is powered by a non-public, but non-industrial, low voltage power distribution system if this equipment is intended to be used in the locations defined in 3.8 or 3.9.

This standard defines the immunity test requirements for equipment specified in the scope in relation to continuous and transient, conducted and radiated disturbances, including electrostatic discharges.

The immunity requirements have been selected to ensure an adequate level of immunity for equipment operating within residential, commercial, public and light-industrial locations. The levels do not, however, cover extreme cases, which may occur at any location, but with an extremely low probability of occurrence. Not all disturbance phenomena have been included for testing purposes in this standard, but only those considered as relevant for the equipment covered by this standard. These test requirements represent essential electromagnetic compatibility immunity requirements. They are specified for each port considered.

NOTE 1 Information on other disturbance phenomena is given in IEC TR 61000-4-1.

NOTE 2 Safety considerations are not covered by this standard.

NOTE 3 In special cases, situations will arise where the levels of disturbances may exceed the test levels specified in this standard, for example where a hand-held transmitter is used in proximity to equipment. In these instances, special mitigation measures may have to be employed.

#### **2 Normative references**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-161, *International Electrotechnical Vocabulary – Part 161: Electromagnetic compatibility* (available at: [www.electropedia.org](http://www.electropedia.org))



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